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10/648,657	08/26/2003	Yoshihide Hoshino	5405-7	3913

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EXAMINER

SHAH, MANISH S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,657

Applicant(s)

HOSHINO, YOSHIHIDE

Examiner

Manish S. Shah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-16 and 18-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 1,4,7-13,15,16,18-20 and 23 is/are rejected.
- 7) ☒ Claim(s) 5,6 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 23 is rejected under 35 U.S.C. 102(e) as being anticipated by Sekiya (# US 6764174).

Sekiya discloses an inkjet recording apparatus for forming an image on a recording medium including a carrying section for carrying the recording medium (element: 40, figure: 5, 7-9); a line head for jetting ink to the recording medium, the head line being provided in a direction approximately perpendicular to a carrying direction of the recording medium which is carried by the carrying section; a an active energy ray radiation section for radiating an active energy ray (halogen lamp) to the ink jetted on the recording medium to cure the ink (element: 76, 84, figure: 5, 7-9); and a temperature controlling mechanism for controlling the temperature of the recording medium which is carried by the carrying section within a preset target temperature range, before the jetted ink received on the recording medium (element: 87, figure: 7-9). They also disclose that the active energy ray is radiated in 0.001-2.0 second (immediately) after the jetted ink is received on the recording medium (column: 11, line: 5-10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 7, 11-14, 16 & 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya (# US 6764174) in view of Ushirogouchi et al. (# US 2003/0231234).

Sekiya discloses an inkjet recording apparatus for forming an image on a recording medium including a carrying section for carrying the recording medium (element: 40, figure: 5, 7-9); a line head for jetting ink to the recording medium, the head line being provided in a direction approximately perpendicular to a carrying direction of the recording medium which is carried by the carrying section; a ultraviolet radiation section for radiating an ultraviolet ray (halogen lamp) to the ink jetted on the recording medium to cure the ink (element: 76, 84, figure: 5, 7-9); and a temperature controlling mechanism for controlling the temperature of the recording medium which is carried by the carrying section within a preset target temperature range, before the jetted ink received on the recording medium (element: 87, figure: 7-9). They also disclose that the temperature controlling mechanism controls a temperature of the recording medium which is carried by the carrying section within the preset target temperature range at least one of an image forming position facing to the line head where an image is formed

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on recording medium by receiving the jetted ink on the recording medium carried by the carrying section and position which is in an upstream position from the image forming position from the image forming position in a carrying direction (column: 11, line: 10-60; column: 12, line: 25-35). They also disclose that the preset temperature is changed according to the type of the recording medium (column: 11, line: 5-65; column: 12, line: 1-35). They also disclose that the active energy ray is radiated in 0.001-2.0 second (immediately) after the jetted ink is received on the recording medium (column: 11, line: 5-10). They also disclose that the temperature adjusting section is in contact with the back surface of a platen with which the recording medium is in contact the platen keeping the recording medium flat on the printing region (element: 87, figure: 8-9) or heat roller (figure: 5, 7-9; column: 11, line: 30-45; 55-65). They also disclose that the temperature adjusting section is arranged in the opposite side of the line head across the recording medium, which is carrying by the carrying section (element: 87, figure, 5, 7-9).

Sekiya fail to teach the claimed invention of an ink jet recording apparatus, wherein the ink has cationic polymerization characteristics, and radiation of the active energy ray is divided into a plurality of steps.

Ushirogouchi et al. teaches that to get the high quality printed image, the ink has cationic polymerization characteristics ([0096], [0098], [0127], [0177]), and radiation of the active energy ray is divided into a plurality of steps (see figures: 1-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the inkjet recording apparatus of Sekiya by the aforementioned teaching of Ushirogouchi et al. in order to have a high quality printed image.

3. Claims 8 & 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya (# US 6764174) in view of Ushirogouchi et al. (# US 2003/0231234) as applied to claims 1, 4, 7, 11-14, 16 & 19 above, and further in view of Tasaki et al. (# EP 0307251 A2).

The combination of Sekiya and Ushirogouchi et al. fail to teach the claimed invention that the apparatus further comprises a humidity detecting section for detecting humidity around the recording medium, and the preset temperature is changed according to the detected humidity, and that the preset temperature rises corresponding to an increase of the detected humidity.

Tasaki et al. disclose a humidity detecting section for detecting humidity around the recording medium (figure: 1, element: 17), and the preset temperature is changed according to the detected humidity, and that the preset temperature rises corresponding to an increase of the detected humidity (page: 13, claims: 1 – 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the humidity detector of Tasaki et al. in the combined invention of Sekiya and Ushirogouchi et al. in order to maintain proper ink drying characteristics in varying ambient humidity conditions.

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4. Claims 10 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya (# US 6764174) in view of Ushirogouchi et al. (# US 2003/0231234) as applied to claims 1, 4, 7, 11-14, 16 & 19 above, and further in view of Medin et al. (# US 5287123).

Sekiya fail to teach the claimed invention of an ink jet recording apparatus wherein the preset temperature is changed according to the type of the recording medium; and that the temperature adjusting section comprises an air blowing apparatus which directs heated air to the recording medium carried by the carrying section.

Medin et al. disclose an ink jet recording apparatus wherein the preset temperature is changed according to the type of the recording (figure: 5A, steps 312 through 314); and a temperature adjusting section comprises an air blowing apparatus which directs heated air to the recording medium carried by the carrying section (see Abstract, lines 9 - 17, element 90 (fan)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to change the preset temperature in view of Medin et al. in the temperature adjusting section of Sekiya as modified and use the blowing apparatus which directs heated air to the recording medium in of Medin et al. in the printing apparatus of Sekiya as modified in order to set the correct temperature of the media for the media type and obtain best ink drying properties of the media used.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya (# US 6764174) in view of Ushirogouchi et al. (# US 2003/0231234) as applied to claims 1, 4, 7, 11-14, 16 & 19 above, and further in view of Chang (US 6619777).

Sekiya fail to teach the claimed invention of an ink jet recording apparatus wherein the amount of a droplet of the ink, which is jetted from the line head to the recording medium, is 2-15 pl (picoliter).

Chang discloses an ink jet recording apparatus (figure: 1, element: 1 (printhead with piezoelectric actuators)), wherein the amount of a droplet of the ink, which is jetted from the line head to the recording medium, is 4 - 20 pl (picoliter) (column: 8, lines: 66 - 67, column: 9, lines: 1 - 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the piezoelectric printhead of Chang in the printing apparatus of Sekiya as modified in order to achieve high printing resolution.

Allowable Subject Matter

6. Claims 21-22 are allowed.

7. Claims 5, 6 & 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(1). A search of prior art did not cite an ink jet recording apparatus wherein a heat quantity loss is not more than 15% of a heat quantity which is applied to the recording medium, when the recording medium is carried to the image forming position after received certain heat quantity which is determined by adjusting temperature of the recording medium, in a case of the temperature controlling mechanism being provided

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only at the upstream position in the carrying direction as claimed in the limitations of claim 5.

(2). A search of prior art did not cite an ink jet recording apparatus wherein the upstream position of the image forming position in the carrying direction is from a start point of a printing region to a position which is double widths of the printing region away from the start point as claimed in the limitations of claim 6.

(3). A search of prior art did not cite an ink jet recording apparatus wherein the temperature adjusting section comprises a peltier element which is used with a heat transfer member for transferring heat to the recording medium, and the heat transfer member is in contact with the recording medium by a component of a force which is generated when carrying the recording medium as claimed in the limitations of claim 14.

Response to Arguments

8. Applicant's arguments with respect to claims 1,4-16 & 18-23 has been considered but are moot in view of the new ground(s) of rejection.

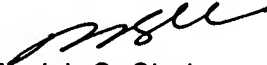
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manish S. Shah whose telephone number is (571) 272-2152. The examiner can normally be reached on 8:00am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Manish S. Shah
Primary Examiner
Art Unit 2853

MSS

6/29/06